II Sysops

A bi-monthly newsletter for, and by, Apple II sysops
Volume 1, Number 3   September/October 1991

Board-by-Board News

What's happening on bulletin boards around the world

Pro-Sol
(619) 670-5379

The Morgan Davis Group has released ProLine 1.8, which proclaims to be "the only full-featured networked bulletin board system for the Apple II." New features include a personal calendar system for users, rot13 to decode certain network articles, several utilities to improve network functions, and three new online games. Upgrades are $25, unless your BBS is already connected to the ProLine network. ProLine 1.8 has a retail price of $259.95 but is currently being offered for $195.50.

Also just released is "ModemWorks Lite," ($25) a scaled-down version of the ModemWorks Developer's Package ($89.95). ModemWorks Lite allows a sysop to run software such as AppleNet or EBBS without having to buy the Developer's Package. ModemWorks Lite comes complete with AmperWorks 2.5, all modem drivers and terminal emulation files. An upgrade from ModemWorks Lite to the Developer's Package is available for $40.

L&L Productions BBS
(702) 322-5551

L&L Productions (GBBS "Pro") has relocated to Reno, Nevada. The phone number listed above connects to L&L's fax machine as well as their BBS. L&L's voice number is now (702) 322-5533. Their new address is: 100 West Pueblo Suite 200, Post Office Box 8398, Reno, Nevada, 89507-9998. When Lance Taylor-Warren announced the move, he said "I'm going to try something different and . . . I think everyone will like it." II Sysops hasn't seen the change, yet.

If you've been getting complaints from your users about transfer problems with SuperTAC (or EXfer), you should remove ProSel's Appointment Calendar CDA from your system, according to Blake Stover. Apparently any CDA which is queued or interupt driven can cause timing problems and corrupt data.

The Captain's Quarters
(614) 294-0556

METAL is now up to version 1.02.98, and includes complete on-disk documentation. The Future Vision network is now up to sixteen sites. Tc

Wilson has been working on METAL GS, which would be the first desktop based BBS program for the II series. He hasn't told us a lot about it, except that it's not far from being done.

Niagara Software BBS
(716) 689-7254

Version 1.0c of Vantage BBS is now available. With the release of Modem-Works Lite, Vantage costs less to operate than before. Vantage BBS retails for $79.95, but is available to II Sysops readers at a discount (see insert).

Corrections

In the last issue, the article on high speed modems was printed with an error. The GBBS cable #3 diagram was incorrect -- there should be a connection between pin-6 (DSR) of the serial-port and pin-8 of the modem (DCD), not pin-6 to pin-6 as published.

Also in the last issue, Greg Berigan's name was accidentally left off of the review of GBBS "Pro". He wrote the GBBS review, as well as the review of METAL in this issue.

II Sysops regrets the errors.

In This Issue...

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The Apple II and High Speed Modems
A Call For Action
Part 3

By Mike Garvey
Sysop of Valhalla BBS (415) 221-4370

The previous articles in this series discussed theoretical and practical issues of interfacing high-speed modems with an Apple II and included instructions on building some nonstandard modem cables to connect one such modem, the U.S. Robotics Courier HST, to Apple //e and IIGS computers. This article will describe the working software configurations for some popular Apple II telecommunications applications: GBBS (ACOS) and ProTERM.

Back in 1987 when I first added the HST to my BBS, I had very little information to go by. I had no idea which cable to use, no idea how to set the DIP-switches on the modem, and -- since GBBS at the time didn't have an dedicated HST driver -- no idea how to configure the modem. I was fortunate that at least one soul had braved this path before me, namely David Metzel. His message posted on the L&L BBS outlined the steps necessary to get the HST running successfully with the then current version of ACOS, v1.2. David's instructions have had to be modified surprisingly little as ACOS evolved over the years, which is a tribute to his foresight (or just plain, good luck).

Later, I also needed to interface the HST with other platforms, such as PC-compatibles with their plethora of diverse programs. As a result, I discovered a wealth of HST information heretofore unknown to me, and I gradually learned the "correct" way to configure the HST to serve as many uses as possible.

When I needed to connect the HST to the Apple IIGS, and connect my BBS to the OGG-Net GBBS network, two people -- Mark Cinelli and Paul Parkhurst, showed me what ACOS **really** expects the modem to do, and how **really** to configure the GS modem-port. The instructions that follow are thus, a synthesis of working (kludged?) Apple II and PC-compatible procedures.

Set It and Forget It -- Configuring the Super Serial Card

Dave Metzel's instructions for setting the Apple Super Serial Card (SSC) DIP-switches have served me well for over four years. In this time, I've thrown at least six different versions of ACOS, nine different modem drivers, and an uncounted number of bizarre modem command-strings at it, and as long as I didn't screw around with the SSC, I've had little grief. So don't even **think** (well...) of setting the SSC DIP-switches differently.

SW1	SW2
1 - On No default baud rate	1 - On 1 stop-bit
2 - On ""	2 - On 8 data-bits
3 - On ""	3 - On No parity
4 - On ""	4 - On ""
5 - On Modem mode	5 - On Return = CR+LF
6 - On ""	6 - On Interrupts forwarded
7 - On Pin-8 = DCD signal	7 - On Pin-19 = alt. CTS signal

Notes: Configuring the SSC for no default baud rate might seem odd, but it does work. With this setup, ACOS appears to send the modem init-string slower than I'd like, but I've had very few problems with GBBS never making it to the waiting-for-call screen. I've experimented with different default baud rates (including a well-meaning but misguided attempt at "locking" the serial port at 19200 by fooling with the SSC) and all except the null setting caused problems of one kind or another. The switch settings are only meaningful at power-up anyway. I had to look to a Tech Note (Apple //e #7: Interfaces -- Serial, Parallel, and IEEE-488) for the true functions of SW1-7 and SW2-7 as the SSC documentation was less than useless.

Frivolous Pursuits --
Configuring the Apple IIGS Modem-Port

ACOS and ProTERM don't really care about the GS modem-port settings, but if you plan on running Paul Parkhurst's excellent GS-port/HST driver, then it wouldn't hurt to use the settings that he recommends:

```
Device Connected:  Modem
Line Length:  Unlimited
Delete first LF after CR:  No
Add LF after CR:  No
Echo:  Off
Buffering:  Yes
Baud:  19200        <--- doesn't really matter, actually
Data/Stop Bits:  8/1
Parity:  None
DCD Handshake:  Yes         <--Important
DSR Handshake:  No
XON/XOFF Handshake:  No
```

Notes: Once again, the baud setting has little impact on us, but in this case, I see where desktop programs can make use of this setting. Since Paul's cable supplies the DCD signal, it's logical to enable DCD handshaking. Actually, this setting enables software to "see" activity on the GPi line (pin-7) whether it's being used for DCD, CTS, or something else entirely.

The Holy Grail -- What the HST Wants Us To Do

As mentioned before, the HST operates best if the software can set the computer-to-modem speed (the DTE rate) higher than the modem-to-modem speed (the link rate). By "locking" the serial-port in this manner,

the HST can run faster and also utilize data-compression for even greater speed gains. Speeds on the order of 1700 cps when transferring already compressed files, using an efficient protocol such as Zmodem, are the norm with this setup. When running with a locked DTE rate it is necessary to support flow-control in hardware by providing the necessary signal lines in the modem cable; and in software, by monitoring the status of these signals and acting accordingly (pausing the modem, writing buffered data to disk, emptying the buffer, and enabling the modem again).

Rude Awakening #7294 --
What Our Software Forces Us To Submit To

Most Apple II communications software, however, is unable to run the HST with a locked DTE rate so the user is left with a significant decrease in throughput. File transfers using Ymodem between ProTERM and GBBS typically average a disappointing 750 cps -- still much faster than a 2400 bps modem, but nowhere near what these modems are capable of. The data compression option is also generally unavailable.

Comparing the recommended init-strings of various versions of ProTERM and ACOS is certainly interesting and definitely amusing -- one wonders how these ever worked at all when you analyze them in detail!

PTv2.02	ATE0V0F1Q0S0=0	X4	&A0&B0&N0&H1 (HST)
	ATE0V0F1Q0S0=0	X3	(CTS)
PTv2.2	ATE0V0 Q0S0=0	X4	&A0&B0&N0&H1 (HST)
	ATE0V0 Q0S0=0	X3	(CTS)
ACOS v1.3	AT S0=1S2=128X3		&C1&D2 (CTS)
ACOS v2.x	ATE0V0F1Q0S0=0S2=128X6		&S1&D2 (HST)
	AT V0 S0=0S2=128X3		&C1&D2 (CTS)

Notes: CTS stands for the CTS Fabri-Tek 2424ADH/AMH (ProTERM's terminology) a.k.a. the CTS 2424H 2400 baud (GBBS's) modem driver that was a functional substitute in lieu of a bona-fide HST driver back in the dark ages (c. 1987). The above table lists commands in common that appear to be basic software requirements, but it also lists a whole lot of redundant fluff that is simply not necessary if one knows the capabilities of the HST modem. For now, be prepared to discard most of this and never trust television again.

Proper configuration of the HST's DIP-switches (which control the power-up defaults), nonvolatile RAM (NRAM, to store modem commands common to the majority of applications), and a steadfast resolve to feed the modem a fat-free diet (read: make init-strings as short as possible), will result in more reliable operation (kudos to the KISS principle) which is what I've been blathering about all along. For the following instructions, it pays to have the HST documentation handy -- I won't always parrot the manual word for word, but instead explain what else is going on, what you should know, and what you should look for.

The first step is to check the DIP-switches at the rear of the HST. As various models of the HST have been released, the functions of these switches and their

factory settings have changed somewhat. Other models should have similar settings that accomplish the same results.

1 - Up   Data Terminal Ready follows pin-20
2 - Up   Verbal result-codes
3 - Down   Result-codes displayed
4 - Up   Command mode local echo ON
5 - Down   Auto Answer suppressed
6 - Up   Carrier Detect follows signal (wherever it is)
7 - Up   Both Originate and Answer result-codes
8 - Down   Enable command mode (the AT commands)
9 - Down   Escape code maintains connection
10 - Up   Power up to NRAM settings (this is the key to paradise)
Quad - Up   Normal, see manual, depends on model (leave it alone)

Notes: These settings won't need to be overridden by the majority of applications. However, both ACOS and ProTERM need the opposite settings for switches 2 and 4, so if you anticipate only running ACOS and/or ProTERM with the HST, then you might want to reverse the settings of these two switches. With the setting of switches 1 and 6, the &C1 and &D2 commands in the "stock" init-strings are now quite redundant.

Next, you should set your communications program to 19200 bps, N-8-1 (no parity, 8 data-bits, 1 stop-bit). You can use ProTERM's (v2.1 or v2.2) OA-^T (open-apple-control-T) and OA-^O (open-apple-control-O) commands to accomplish this. Reset the HST to its factory settings by issuing the &F command, then change the following:

S7=50	Longer for international calls
S10=10	Helps reduce line dropouts
S11=50	Increase dialing speed, test how fast your exchange will allow
S19=5	Set inactivity timer (we all **know** how flaky GBBS's timer is)
S28=4	Improves some 2400 bps connections
M1	I like to use my speaker when I dial-out (most of the time)
T	Touch-tone dialing
X7	X6 gives false "voice" result-code sometimes
&A3	Unless it confuses your software (it does but do it anyway)
&K1	Auto enable/disable data compression
&S1	Modem controls DSR (we need this for our "strange" cables)

If you have a model with a programmable voice/data switch:
S32=6	Pushing the button is equivalent to ATZ (very handy)

And be sure to plug the phone line into the correct (wall jack) socket on the rear of the modem as it **does** make a difference with the newer HSTs.

Notes: Again, if you're limiting yourself to just ProTERM and/or ACOS, then you should use the following in addition to the above:
S27=128	Suppress CONNECT 7200, 12000 or

	14400 result-codes
X4	Suppress RINGING result-code
&A0	Suppress ARQ result-codes

The following are included for clarity only, they do not need to be changed since they default to these values following the &F command:

&B0	Default -- ProTERM and ACOS cannot handle a locked DTE rate
&H0	Default -- Nor are they aware of hardware flow-control
&R1	Default -- (pity)

Software that can handle a locked DTE rate and hardware flow-control should use &B1, &H1 and &R2 (optional) in their command-strings.

These next commands need not be changed either as they are true if you use the aforementioned ProTERM/ACOS-only settings for DIP-switches 2 and 4:

| E0 | Local echo is really only for carbon-unit edification |
| V0 | So is the universal translator |

And you might be interested in watching the antics of the DSR signal with our "strange" cables:

| S34=16 | MR light is now DSR, line noise retraining is rare anyway |

Finally, save the new settings to the modem's NRAM with the &W command. Note: When making changes such as outlined above, be sure to use the &F command immediately before entering the changes and saving them, otherwise you will be changing the "current" setup (viewable with the I4 command) -- which might not match the factory settings. If you wish to change an existing setup, then start with the Z command.

Now, when you issue the I5 command you should see (for an HST Dual Standard with v.32bis and v.42bis) something like this:

USRobotics Courier 14400 HST Dual Standard NRAM Settings...

```
DIAL=TONE  B0 F1 M1 X7
BAUD=19200 PARITY=N  WORDLEN=8

&A3 &B0 &G0 &H0 &I0 &K1 &L0 &M4 &N0
&P0 &R1 &S1 &T5 &X0 &Y1 %R0

S02=043  S03=013  S04=010  S05=008  S06=002
S07=050  S08=002  S09=006  S10=010  S11=050
S12=050  S13=000  S15=000  S19=005  S21=010
S22=017  S23=019  S24=150  S26=001  S27=000
S28=004  S29=020  S32=006  S33=000  S34=016
S35=000  S36=000  S37=000  S38=000
```

With DIP-switch 10 UP, the following (I4 command) settings will become the "current" settings after a Z

command (or when you tickle the "voice/data" switch): USRobotics Courier 14400 HST Dual Standard Settings...

```
B0 C1 E1 F1 M1 Q0 V1 X7
BAUD=19200 PARITY=N  WORDLEN=8
DIAL=HUNT  ON HOOK  TIMER

&A3 &B0 &C1 &D2 &G0 &H0 &I0 &K1 &L0
&M4 &N0 &P0 &R1 &S1 &T5 &X0 &Y1 %R0

S00=000  S01=000  S02=043  S03=013  S04=010
S05=008  S06=002  S07=050  S08=002  S09=006
S10=010  S11=050  S12=050  S13=000  S14=000
S15=000  S16=000  S17=000  S18=000  S19=005
S20=000  S21=010  S22=017  S23=019  S24=150
S25=000  S26=001  S27=000  S28=004  S29=020
S30=000  S31=000  S32=006  S33=000  S34=016
S35=000  S36=000  S37=000  S38=000
```

The F1, Q0, &B0, &N0, &S1, and S10=3 commands in those "stock" strings now also fall by the wayside (remember, this display reflects the HST factory settings plus our judicious changes to NRAM), while ProTERM's &H1 is just plain silly -- there's no point in enabling flow-control if you're not locking the DTE rate.

These displays for other HST models or other valid NRAM settings used, will differ slightly from the above, but the HST manual should help explain away most of the confusion.

It is possible to program the HST with the commands in the following application command-strings, too. If you use the HST with only one program, then this is a good idea. I prefer to setup the HST with the common commands listed above, and let the individual command-strings do the rest, as long as they don't become too long and cumbersome.

Hindsight is Grand -- Setup for ACOS 1.3

Originally, to get the HST to work with ACOS 1.3, your best bet was to use the CTS 2424H 2400 baud driver which gave the modem enough of the right commands and avoided most of the wrong commands, so that it would function more or less correctly. Using the CTS driver as a baseline, you can then modify the "stock" string with a block-editor. Start with a virgin copy of ACOS.OBJ and use CONFIG.SYSTEM to select this driver (also configure the other user-definable options), then, using the block-editor, locate the init-string in ACOS.OBJ (search for "AT") and change it to the following:

|ATE0V0B0M0X4S0=1S2=128 &A0S27=128||

where the vertical bars (|) stand for return characters -- you would enter these as $0D numbers. The extra returns (you'd expect only one at the end of the initstring to be necessary) are used to avoid an HST bug. If the

line rings while the modem is being sent command-strings, sometimes the HST gets very con- fused, and refuses to do anything from that point on until power is cycled (yes, this is the correct explanation for this bit of weirdness that I'm sure you've all seen before). For some reason, the double returns seem to help.

The other command-string you'll notice when you look at ACOS.OBJ with a block-editor is the answer-string. It should remain ATA. The only thing you need to be careful with when using a block-editor is that you don't accidentally step on anything other than the modem init-string. This shouldn't be a problem as there are generally plenty of null bytes ($00 numbers) at the end of the init-string that can be safely overwritten.

Not Much of a Change -- Setup for ACOS 2.x

The most significant difference between ACOS 2.x and 1.3 is that v2.x no longer requires the modem to be set to auto-answer the phone. This is better overall as the modem won't continue to answer the phone if the BBS has crashed (which of course never happens). So, the S0=1 command is no longer necessary.

CONFIG has also been updated to support modification of the init-string, but you'll still want to use a block-editor to insert those extra returns because you won't be able to enter literal returns in CONFIG. The following init-string is what I use on Valhalla, which is currently running ACOS 2.12:

|ATE0V0B0M0X4S2=128 &A0S27=128||

Notes: Since we're down to the final steps, it's probably safe to assume that the remaining commands in those "stock" init-strings should be taken seriously now. Yes, ACOS really does expect the following conditions to be met. Command Mode Local Echo should be off (E0 or DIP-switch 4 DOWN), and the modem should respond with Numeric Result-Codes (V0 or DIP-switch 2 DOWN). ACOS doesn't recognize the RINGING (11) or VOICE (12) result-codes so X4 is necessary. And ACOS doesn't allow the modem escape sequence, +++, (poor man's security) so S2=128 disables that option.

But what are the &A0 and S27=128 commands doing there? Nowhere in the GBBS (or ProTERM, for that matter) documentation does it mention the pos-sibility that the software might not be able to swallow the extended HST result-codes. Mark Cinelli pointed me in the right direction here -- you MUST set &A0 to disable the ARQ codes. Similarly, when I got the newer HST I found that ACOS v2.12 was refusing to accept further callers after the first lucky CONNECT 14400 (25) came through. Therefore, it is also imperative that you set S27=128 to make ACOS believe that all CONNECT 7200 (20), 12000 (21), and 14400 (25) results are the garden-variety CONNECT 9600 (13). The correct speed remains accessible via the I6 command after the caller logs off, if some enterprising ACOS programmer wants to get at it.

My BBS is part of a network (OGG-Net) and calls another BBS every day to exchange messages and mail. The other BBS also has an HST Dual-Standard but is lacking the v.32bis speed option. I prefer calling this BBS at HST (14400) rather than v.32 (9600) speeds, so the networking software forces HST mode by including a B1 command in its dial-string. If I were to leave the modem set to B1 at all times, then v.32 callers would be unable to connect at anything over 2400 bps. There-fore, I need to insure that the modem is set to B0 except when I'm networking. I also only use the speaker with my terminal programs, so I disable it for the BBS -- M0.

When GBBS is done with the modem, the I4 com-mand will produce the following (assuming ACOS 2.x): USRobotics Courier 14400 HST Dual Standard Settings...

```
B0 C1 E0 F1 M0 Q0 V0 X4
BAUD=19200 PARITY=N WORDLEN=8
DIAL=HUNT  ON HOOK  TIMER

&A0 &B0 &C1 &D2 &G0 &H0 &I0 &K1 &L0
&M4 &N0 &P0 &R1 &S1 &T5 &X0 &Y1 %R0

S00=000 S01=000 S02=128 S03=013 S04=010
S05=008 S06=002 S07=050 S08=002 S09=006
S10=010 S11=050 S12=050 S13=000 S14=000
S15=000 S16=000 S17=000 S18=000 S19=005
S20=000 S21=010 S22=017 S23=019 S24=150
S25=000 S26=001 S27=128 S28=004 S29=020
S30=000 S31=000 S32=006 S33=000 S34=016
S35=000 S36=000 S37=000 S38=000
```

Winding Down -- Setup for ProTERM

ProTERM is very much like ACOS in its modem requirements. This is not surprising as both programs were written by the same author, Greg Schaefer. An init-string similar to that used with ACOS works just fine -- here's what I use:

ATE0V0B1M3X4&A0S27=128

It is preferable to try and connect with other HSTs using HST protocol (B1) since not everyone has a Dual Standard with v.32bis, but most HSTs are capable of 14400 bps in HST mode. The B1 setting in no way impairs my ability to connect to v.32-only modems. Finally, although I've setup the speaker to be on during dialing and linking, in reality, I prefer to have it on only while a connection is pending -- M3 (most of the time).

Once again, the "stock" HST init-strings for ProTERM and ACOS 2.x have a lot of extra baggage in them. Included are commands such as F1, Q0, and &S1 which appear mandatory, but are either factory settings, or have been modified and saved to NRAM as suggested above. If for some reason, these options are believed to be set incorrectly, then it is simply a matter of resetting the modem (the Z command) before you start-up a different program. This is generally a good idea in any case, and if you reprogram the "voice/data" switch as above, you merely have to push the switch before you launch the new application--simple and elegant.

METAL

Second in a series of reviews of major Apple II BBS programs

By GREG BERIGAN

Yes, I know, in the last issue I said that in the next issue I would have an review of ProLine. Unfortunately, I was unable to get everything set up with a friend with more disk storage so as to give a fairer review of ProLine. Recent developments did allow me to get METAL running, so I felt it would be best if I reviewed it before ProLine.

METAL

METAL (Mega-Extensive Telecommunication Application Language) from Wilson Wares is the latest program out for the Apple II, but my no means the weakest, as one usually expects of newcomers. It has an advantage of being the second bulletin board system put out by Tc Wilson (the first being the infamous MACOS), with knowledge of the weaknesses of that product and of what it was derived from.

METAL shows lots of promise. It is a BASIC, like ACOS, structured and edited like ACOS, but has many advantages over ACOS, not the least of which is full support for 2-dimensional arrays. This ability is sorely lacking in ACOS, which makes designing games under METAL much easier. In fact, many online games which were originally written in ACOS are now available for METAL.

METAL has a useful method of configuring your system. Using a simple TXT file called METAL.CONFIG, you can configure your modem, printer, clock, memory, storage, display, and several system defaults. Any of these can be changed online, followed by a restart of the entire system. A very useful ability is to separate the compiled METAL files from the source files. Most often the compiled files are set to be stored in a RAMdisk, since it isn't all-important to keep them around. Also you can reconfigure the 10 drive specifiers, something unheard-of under ACOS.

Not that you are limited to just the 10 drive specifiers. You can also specify files by their ProDOS pathname, so you can define your own custom drive specs using an array of strings. Also, it allows the sysop more freedom and security, letting him store special files to be accessed only from the console on separate disks to be inserted when needed, as well as including files in messages from a variety of sources.

The device drivers are stored in separate files, making the system very modular. This method was strangely abandoned by ACOS, going for having all the drivers stored within the CONFIG program, whereas METAL sysops can simply download a small file, edit the METAL.CONFIG file, and have their new modem driver running.

Also METAL breaks the 4K message barrier. In fact, with METAL, you can compose a message larger than the capacity of ProTERM's editor. Under the configuration I run, I have a 60K editor available, more than enough for the normal use by users, as well as those users who regularly ran over the end of ACOS' 4K editor.

METAL however can handle messages even larger than that. While it does not directly support a Single Message File format (SMF, pron. "smurf"), it does provide file capabilities in the language sufficient to implement SMF files, which is what is done. This allows the format to change according to a sysop's needs. While some may think that putting all your messages in one file is asking for trouble, I feel the risk of losing an entire message area due to a bad disk block is less than the advantage of using a file format that avoids the space wasted by ProDOS for messages greater than 512 bytes in length, and the end-file waste.

The previously mentioned editor also comes in two varieties: line mode and a full-screen mode. The full-screen editor however is only accessible by users who are capable of Datamedia 1500, ProTERM Special, of MouseLink v3.0 emulations. However it does allow much freedom in allowing the special features of each to be used, especially the ProTERM Special emulation, although not perfect. It has problems interpreting "?" and "|" when in PSE mode, and when lines are deleted, the line that scrolls onto the screen is taken from the end of the message instead of the next line off the edge of the "window".

The line mode editor however is a major step backward from ACOS' editor. When entering the command while in edit mode, you cannot provide a parameter immediately. Well, you can, but it will then decide that you did not intend it to be a command, and store it in the editor. Add to that the inability to delete multiple lines on one command, and you have an editor which is suddenly more difficult to use.

METAL also makes the bad assumption that everyone has a "non-destruct" backspace. Many users have backspaces that behave as a delete, removing the previous character from the screen, and often don't have the ability to send a true DEL (ASCII 127) character. The only way I can make this problem apparent is to set users to an automatic Left-Justify mode, which reprints the line upon pressing return, regardless of whether reprinting is necessary. Documentation of METAL is a bit incomplete. While the manual is available for download from the support board, not all commands have been documented, and the files themselves are AppleWorks documents using custom printer codes in nonstandard ways. It thoroughly confused my printer, which at one point decided to form-feed several blank pages through the printer. I understand that it is still a relatively new program, but it

would be nice if the downloadable archive of AWP files was complete, or at least offered in portions so that when changes are made, you needn't download the entire file again. Just the new/updated parts. The program itself is also nicely available as separate files. [Ed: More complete documentation is now available.]

However, even with these drawbacks, METAL is a very powerful system. It shows great promise to the sysop. Myself, I have switched from ACOS to METAL. However, I had to reconfigure my system storage setup. It uses more storage (two 800K, one 140K drives) now under METAL than it did under ACOS, and I had to trim out things I couldn't support under that setup, such as the transfer area, the "User Shell", and the networking which Future Vision (the software that METAL runs) includes in the standard configuration. It isn't a system for a 2 5.25" drive setup.

METAL, still being rather new, is certain to go under several modifications, and more documentation will become available as more features are added, such as the promised built-in assembler. As-is, it can run a very competent and powerful system, and everything points to more power and features. There will just be some tough times for awhile, while the system is still takes shape, but I am confident that patience will be rewarded.

Vendor List

GBBS-Instant Callback Validation Mod

What it does:
Callback will actually call a new registering user back with your modem and attempt to connect. then ask for the account information given when they registered. If all goes well. access flags you pre-select are given to the account, information is saved, the status is written to the request file, and the user may call back with the access you've given them while you can be asleep, on vacation, or just not near your computer! You still have the option to kill the user or update the information because the request file is still made with this extra information.

Options Of Security:
Complete Security of your system.
Prevents "Double accounts" which waste disk space.
Saves you time, letting you improve your BBS's look

Requirements:
Approx. 100k of free space
GBBS "PRO" segments (Can easily be modified for other BBS's (Call / Write)
Any Hayes compatible modem connected to your computer

Purchasing   Information
Questions? Call or write! Send $20 check to address below if interested. Program may be viewed, call first by voice! (216)-883-7247 Jeff Garvas / 4876 E. 85th Street / Garfield Hts. Ohio, 44125 / Calls excepted weekdays after 4pm.